2: Murphy G-4 (no date) 1953 AF15 East China AF15

for sale in Shanghai is not only convenient but environmentally advantageous.

How much of the city's supply of vegetables comes from its market-garden area (a day's water travel, or about a 30-mile radius from the city, an area where vegetables rival rice as the leading crop), and how much from greater distances is difficult to determine with any accuracy in the absence of published records. The principal vegetable market in Shanghai is along both banks of Soochow Creek near its mouth, which suggests that vegetables come into the city by water from its immediate environs. Merchants and vendors there, including many farmers who bring their vegetables into the city by sampan for daily or twice weekly markets, speak only of the near neighborhood of the city as the source of their wares. About 15 square miles within the Municipality of Greater Shanghai itself are occupied by vegetable crops,[31] which can take the fullest advantage both of convenience to the market and of favorable environment in this fertile flat delta land. Vegetables undoubtedly come into the city in large amounts from greater distances, although it is unlikely that bulk shipments of such perishable commodities would move beyond the delta. The railways do not carry them in any significant quantities.[32]

Although its place in the Shanghai diet is relatively minor (see above p. 139), wheat is a major food commodity for the city because of the prominent place of the flour milling industry there. While over two-thirds of the flour milled is exported, principally to north China ports, the wheat must first be brought to the city even though most of it is not eventually consumed there.

Shanghai drew its domestic wheat largely from Kiangsu. Only a minor crop within the fertile triangle, wheat is of much greater importance in the drier and colder areas of Kiangsu north of the Yangtze, and in the western parts of the delta. This production, plus the wheat raised almost entirely for sale as a dry-field winter crop within the fertile triangle, can be carried to Shanghai from nearly every producing area via the water network of the delta, including the Yangtze itself. While the delta area is by no means a leading wheat producer, it is wholly unique among wheat areas in China in its cheap and easy transport connections with a large urban

2: Murphy G-4 (no date) 1953 AF15 East China AF15

256 438 489 market. The semi-arid north, where most of China's wheat is grown, has almost no water transportation. Water in the delta has made it possible for wheat production there to become highly commercialized as Shanghai developed into a huge industrial market which water routes made accessible in terms of transport costs for bulk shipments.* This helps to explain the anomaly of Shanghai (rather than Tientsin — a close second) as the largest wheat-milling center in China despite its great distance from China's major wheat-producing areas where other industrial centers, notably Tientsin, also mill flour.

439 505 Domestic sources of wheat, however, accounted for slightly less than half of the city's supply during most of the 1920's and 1930's. Although Kiangsu sources held the commanding position domestically, wheat also came to the city especially from the major wheat area of Shantung, by sea from Tsingtao, where it was collected largely by rail. Shanghai's connections by sea thus implemented its water connections in the delta in ensuring a steady flow of low-cost cereals. Dependence on overseas sources for more than half of its wheat was more workable economically for Shanghai, with its location and harbor facilities, than for any other China port. It was cheaper for Shanghai to bring in wheat from Canada, the United States, and Australia (the three major overseas sources in order of importance) than for Tientsin, without inland water transport, to bring in wheat from the producing areas of north China beyond its immediate Hopeh region of the north China plain.

These imports of wheat from overseas fluctuated considerably from year to year according to price conditions. As in the case of rice, wheat imports were unusually high in years of civil disorder and (or) rain and floods in the delta area, notably in 1926, and decreased markedly in intervening years of political and climatic stability.[33] Again the inference is that stoppages of water transport in the delta were the key factor. As an ocean port near major world shipping lanes, Shanghai could import at a practicable cost whatever goods normally obtained from the delta which temporary cir-

* Water as rainfall, or as irrigation, also keeps wheat yields higher in the delta than the north China average.

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

dietary-deficiency disease among the 75 workers fed in the kitchen, while many young workers in neighbouring factories acting as the scientific controls, were suffering from disease.

The country habit of storing rice in the husk, and dehusking only that portion which is necessary for the food of the family during the day, no longer holds for city life. Rice is dehusked in the country and transported husked and milled to the city to save transportation costs, and because highly milled rice keeps well. After long storing, however, residual fats present become rancid, and in order to make the rice palatable, it must be washed. First with the milling and later with the washing disappear the essential vitamin contents which prevent dietary-deficiency disease. The experiment was designed to prove that, if rice were stored in the husk, and only milled immediately prior to use, it was unnecessary to wash it, and the vitamin content, therefore, remained to check the onslaught of deficiency disease. No other change from normal food eaten in factories was made in the diet. No additional vegetables or fruits were given. Reliance was placed only on prevention of loss of vitamins in the rice.

The intention had been to make the kitchen the nucleus of a district food service which would apply the results of the study on a wider scale as a demonstration. It was ironic that war should have interrupted the experiment, and that it should not only have become impossible to make any application of the important facts demonstrated in the experiment, but that stocks of Chinese rice, milled or unhusked, should virtually disappear from the Shanghai market, and that the city should have to depend for the ensuing five years on imported rice, all husked, and very high in price.

It might be thought that, with the price of rice soaring out of all bounds, factory owners who supply food to their workers would reduce the quantity of rice supplied, mix it with other cereals, or vary it with beans. But both management and workers have a mistaken idea that, if at all possible, the usual number of bowls of rice must be provided, whatever happens to the "side dishes" of bean curd, vegetables, fish or, rarely, meat. In consequence, expensive imported polished de-vitaminised rice continued to be eaten in former quantities. If the "side dishes" were reduced, as they were in size and variety in order to decrease costs, this last source of nutrients also disappeared. It is small wonder, then, that by 1941, and